



Name: _____
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 Geometry, Period _____
 Due Date: Wed, 7 Jan 2015

HW80 Difference of Squares

Form A

**Geometry
Homework**

Quadratics: Difference of Squares

A difference of two squares is a type of quadratic equations of the form:

$$(a + b)(a - b) = a^2 - b^2$$

Example: $x^2 - 25 = 0$

$$x^2 - 5^2 = 0$$

$$(x + 5)(x - 5) = 0$$

We get two values for x :

$$x + 5 = 0 \Rightarrow x = -5$$

$$x - 5 = 0 \Rightarrow x = 5$$

Be careful! This method only works for difference of two squares and not for the sum of two squares: $a^2 + b^2 \neq (a + b)(a - b)$ Taken from <http://www.onlinemathlearning.com/factoring-quadratic.html>

I. Using the example above, answer the following questions:

- What is the solution set? $x = \{-5, 5\}$
- Test each solution to prove that they are correct: (Plug them back into the original equation.)
 Solution 1: _____ Solution 2: _____

3. Rewrite $x^2 - 25$ in the standard quadratic form $ax^2 + bx + c$. $x^2 + 0x - 25$

4. What is the a value? _____ What is the b value? _____ What is the c value? _____

5. What is the sum of the solutions? _____

II. FOILing & comparing quadratics

Write in **quadratic** form. (You may FOIL or use the box method in your notebooks. Just write answers here.)

| Squared sum | Squared difference | Difference of squares |
|---|---|-------------------------------------|
| 1. $(x + 1)^2$ $= (x + 1)(x + 1) = x^2 + 2x + 1$ | 7. $(x - 1)^2$ $= (x - 1)(x - 1) = x^2 - 2x + 1$ | 13. $(x + 1)(x - 1)$ $= x^2 - 1$ |
| 2. $(x + 2)^2 =$ _____ | 8. $(x - 2)^2 =$ _____ | 14. $(x + 2)(x - 2) =$ _____ |
| 3. $(x + 3)^2 =$ _____ | 9. $(x - 3)^2 =$ _____ | 15. $(x + 3)(x - 3) =$ _____ |
| 4. $(2x + 1)^2 =$ _____ | 10. $(2x - 1)^2 =$ _____ | 16. $(2x + 1)(2x - 1) =$ _____ |
| 5. $(2x + 2)^2 = 4x^2 + 8x + 4$ | 11. $(2x - 2)^2 = 4x^2 - 8x + 4$ | 17. $(2x + 2)(2x - 2) = 4x^2 - 4$ |
| 6. $(2x + 3)^2 = 4x^2 + 12x + 9$ | 12. $(2x - 3)^2 = 4x^2 - 12x + 9$ | 18. $(2x + 3)(2x - 3) = 4x^2 - 9$ |

What patterns do you notice, and what conclusions can you draw from your work above?

III. Difference of Two Squares: Find the solutions to these problems

Difference of Squares ~ Factoring Quadratics

1. $36c^2 - 25 \rightarrow$ What's different?

2. $25d^2 - 9$

3. $16d^2 - 9$

6c -5 0c
 $\begin{array}{|c|c|} \hline 36c^2 & -30c \\ \hline 5 & -25 \\ \hline \end{array}$
 Answer: No B term!
 Can still solve with
 box method
 $(6c+5)(6c-5)$

4. $y^2 - 4$

5. $4f^2 - 25$

6. $27v^2 - 48$

7. $r^2 - 64$

8. $25e^2 - 4$

9. ~~$150r^2 - 54r$~~

10. $4p^2 - 1$

11. $16k^2 - 1$

12. ~~$24a^4 - 6a^2$~~

13. $9g^2 - 64$

14. ~~$125g^2 - 32$~~

15. $p^2 - 49$

3g -8 0g
 $\begin{array}{|c|c|} \hline 9g^2 & -24g \\ \hline +8 & -64 \\ \hline \end{array}$
 $(3g-8)(3g+8)$

IV. Given that $x^2 - x - 42 = 0$, Josh determines that the solution set is $x = \{-7, 6\}$. Is he right or wrong?

If right, prove it (not just by showing work to get the answer, but also by testing it.). If wrong, explain how you know it is wrong (not just by showing the correct work, but by testing it), then show the mistake and correction.

$\begin{array}{|c|c|} \hline x^2 & \\ \hline & -42 \\ \hline \end{array}$
 1, 42
 3, 14
 6, 7